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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,736	11/20/2003	Scott E. Black	03-1135	8708
74576	7590	06/29/2009		
HUGH P. GORTLER			EXAMINER	
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			ART UNIT	PAPER NUMBER
			2863	
			MAIL DATE	DELIVERY MODE
			06/29/2009	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/717,736

**Applicant(s)**

BLACK ET AL.

**Examiner**

TUNG S. LAU

**Art Unit**

2863

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 May 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 9-23 is/are pending in the application.
- 4a) Of the above claim(s) 18-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 10-17 is/are rejected.
- 7) ☒ Claim(s) 9 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Election/Restrictions***

1. Claims 18-23 stand withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention (without traverse) as noted on 05/18/2006.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 10, 11, 12, 13, 14, 15, 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by GARY G. YEN (Health Monitoring of Vibration Signatures in Rotorcraft Wings, Neural Processing Letters 4: 127-137, 1996. @ 1996 Kluwer Academic Publishers. Printed in the Netherlands).

**Regarding claim 1:**

GARY G. YEN describes a method of operating aircraft (section 1), comprising: monitoring operating parameters of a component of the aircraft; monitoring system-level health of and aircraft control system including the component (section 1, 2, rotor, drivetrain, gearbox monitor); processing the operating parameters and the system-level health to determine health of the component, including performing principal component analysis (PCA) to provide a reduced

set of data (section 3, 3.1-3.6), and using the reduced set in conjunction with the system level health to determine a health assessment parameter for the component; and reconfiguring at least one of the component and the flight control system to compensate for the component during operation if the health assessment parameter indicates a degradation of the component (section 2-3, (including subsection of 2 and 3)).

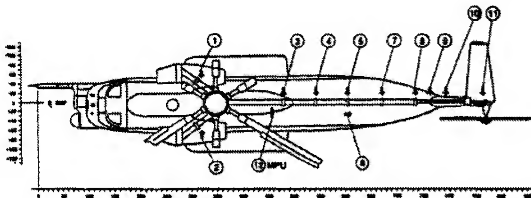


Figure 1. Sensor configuration in the tail rotor drive shaft and bearing of MH-53J PAVE LOW helicopter.

**Regarding claim 10**, GARY G. YEN further describes reconfiguring at least one of the component and the system includes reconfiguring the flight control system to take into account a degradation of an actuator (section 2, including subsections, transmission gearbox).

**Regarding claim 1**, GARY G. YEN further describes feeding back the reconfiguring of the at least one of the component and the system into the processing of the operating parameters and the system-level health (section 3, real-time reconfigure of the system, (including subsection of 3)).

**Regarding claim 12,** GARY G. YEN further describes inputting the system and component health into maintenance support (section 3, , including subsections, corrective maintenance actions).

**Regarding claim 13,** GARY G. YEN further describes the maintenance support includes at least one of enable post-flight analysis (section 3) and interpretation, and prognosis of the component and system (section 3, including subsections).

**Regarding claim 14,** GARY G. YEN further describes detecting a level of degradation of the component that can be used to reduce false alarms in a Built-In Test system (section 3, , including subsections, specially 3.6).

**Regarding claim 15,** GARY G. YEN further describes trending one or more degradations to provide a prognostic capability (section 3, , including subsections, specially 3.6).

**Regarding claim 16,** GARY G. YEN further describes reconfiguring at least one of the component and the system includes reconfiguring at least one of the component and the system using an integrated vehicle health management system (section 3, including subsections).

**Regarding claim 17,** GARY G. YEN further describes integrating an integrated vehicle health management system with reconfigurable control (section 3), and performing tests of at least one of the component and the system during actual operation of the product (section 3, real-time in flight of the helicopter).

***Allowable Subject Matter***

3. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all the limitation of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance: prior art fail to teach: the system health is monitored to determine break points for health discrimination; wherein a scaling factor is determined from the PCA; and wherein the breakpoints are combined with the scaling parameter to determine the health assessment .parameter,

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Response to Arguments***

4. Applicant's arguments with respect to the amended claims have been considered but are moot in view of the new ground(s) of rejection. However, applicant's arguments filed 05/08/2009 have been fully considered but they are not persuasive.

**Conclusion**

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

#### **Contact information**

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung S. Lau whose telephone number is 571-272-2274. The examiner can normally be reached on M-F 9-5:30. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone numbers for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Tung S. Lau/  
Primary Examiner, Art Unit 2863  
June 25, 2009